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A Study on the Effect of Two Word Wall Formats on the Decoding Abilities of Second Grade Students

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A Study on the Effect of Two Word Wall Formats on the Decoding Abilities of Second Grade Students

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Dedication

This thesis is lovingly dedicated, first, to God, who makes all things possible, secondly, to Chris, my husband, who "held down the fort" while I was absent, either physically or mentally, and last but not least, to Chelsea and Nathaniel, the best kids a mom could ever want, who rarely complained about my hours in the library, cheerfully helped me to return stacks of books, and rejoiced with me at every milestone, every chapter, every hurdle along the way.

I would also like to give special recognition and thanks to Sandy Pray and Erin Weaver, who generously volunteered their classrooms for this study, as well as their observations and encouragement.

Abstract

The purpose for the study was to determine the effects of two different formats of a classroom word wall (Alphabetical Format, AF, and Rime Format, RF) on one aspect of phonic decoding, namely, decoding by analogy. The subjects were 41 second grade students in two separate classes of a suburban school district. An alphabetical format word wall was placed in each classroom with no specific instructions to the teacher other than to introduce words as usual and then place them in the appropriate place on the word wall. After three weeks, the subjects were informally tested for decoding by analogy with words that share rimes with the words on the word wall. The word wall was then changed to a rime format, where words that share rimes were grouped together. After a period of twelve weeks, the subjects were tested as before. Data were analyzed using a t test of Different Means. Results indicated that the rime format word wall resulted in significantly higher scores on the informal test of decoding by analogy.

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CHAPTER I

Statement of the Problem

Purpose

The purpose for the study was to determine the effects of two different formats of a classroom word wall (Alphabetical Format, AF, and Rime Format, RF) on one aspect of phonic decoding, namely, decoding by analogy.

Need for the Study

Few educators will argue reading is a complicated process. An accomplished reader makes use of several cue systems. The phonics system involves the sound-letter correspondences and is sometimes known as the alphabetic principle (Bowey & Francis, 1991). The semantics system uses the meanings of the words and phrases to make sense of the print. The syntactic system uses the reader's knowledge of parts of speech (nouns, adjectives, verbs, et cetera) to bring meaning to a passage. Finally, the schema, or background knowledge of the reader, can be accessed to create a

meaning relevant to the reader (Goodman, 1968). All of these systems are important to a competent reader and can be likened to driving a four cylinder car. Each cylinder is like one of these cuing systems and the car runs best when all four are in use (G. Begy, personal communication, March 9, 1998).

However, it is probably safe to say that over the years, phonics has caused the most controversy in the field of reading (Goodman, 1993). This study investigated one aspect of phonics---decoding by analogy.

Learning to read involves a typical progression. As adults read to young children, they become familiar with the printed word. They first may "read" words that they associate with a particular picture on the page. Next, they may learn that a distinctive feature of a word will help them remember what they have heard. For example, *mallard* may be recognized as a string of letters with two straight lines in the middle. But when children start to make the connection between the sounds that they hear *within* a word and the letters on the page, graphophonemic awareness begins.

Onset and rime units are word parts that are smaller than syllables but larger than phonemes. The onset of a syllable is the initial consonant sound represented by one or more letters. The rime is the vowel that follows the initial consonant sound and any remaining letters in that syllable. All syllables have rimes but not all syllables have onsets. For example, the word *out* has no onset but the rime is *out.*

Reading by analogy (Goswami, 1995) is one skill of several that readers may use when they encounter an unfamiliar word (Gaskins, Gaskins, and Gaskins, 1992). This technique involves accessing the words already stored in memory to look for similarities between them and the unknown word. Given that the rime of a word is usually the larger part, it is preferable to use it to find similarities, since finding a word with the same rime will provide more information to the reader. When a word with the same rime is found in memory, the new onset can then be substituted for the old one, giving the reader a very good approximation of the word. Finally, the context clues, semantics, and syntax come into play to enable the reader to create a plausible meaning for the unknown word.

Sometimes, classroom teachers use bulletin boards to display words that their students are trying to learn. Most commonly, these "word walls" are arranged alphabetically (Cunningham, 1991). Recently, however, a different format for the classroom word wall has been proposed (Wagstaff, 1994). Using the most commonly found rimes from the reading material children use in school, words are placed with others that share the same rime, rather than the same initial letter. This way, rime similarities between words will be more evident, which may in turn improve the reading by analogy skills of the students.

There is a very small body of research on the effects of word walls in the classroom. This researcher found only classroom activities and no research studies at all. Since word walls are relatively new and becoming more popular, research on their effectiveness and/or impact on students needs to be conducted.

Research Question

When considering the decoding by analogy strategy of second grade students, does the Rime Format word wall have a more positive effect than the Alphabetical Format word wall?

CHAPTER II

Statement of Purpose

The purpose for the study was to determine the effects of two different formats of a classroom word wall (Alphabetical Format, AF, and Rime Format, RF) on one aspect of phonic decoding, namely, decoding by analogy.

Review of the Literature

In the early part of this century, reading was defined as the ability to pronounce words in print. Indrisano and Chall (1995) refer to the first stage theory of reading development by William S. Gray in 1925. Even as late as 1955, in the heat of the "phonics vs. look-say" debate, Flesch recounts witnessing phonics-taught first grade students "reading from a newspaper," even though he admits that often the meaning of the passage escaped the reader. Twenty-five years later, the debate raged on (Flesch, 1981) and pronouncing words correctly was still considered reading (p. 12) by some. But, over the years and across the field of education, the definition of reading has evolved to include the concept of comprehension, and became known as a "meaning getting

process." In 1968, Goodman wrote," Reading is the receptive phase of written communication," giving the impression that reading is simply a transfer of information. Although he goes on to define reading as an interaction between the reader and written language, Goodman concludes that the reader must attempt to reconstruct a message from the writer. The current concept of reading defines it as "making sense of print" (Moustafa, 1997), which takes into account the schema of the reader, not only in terms of experience with language but also, with the subject at hand (Goodman, 1965; 1968).

More than thirty years ago, educators realized the importance of using more than just phonics to teach reading (Cunningham, 1991; Durkin,1962; Frenzel, 1978; Goodman, 1965, 1968, 1993; Moustafa,1997; Siler, 1973). In fact, Routman (1994) states that phonics is *subordinate* to the syntactic and semantic cueing systems, that the reader needs to be already using these two systems for phonics to make sense. Routman asserts that when readers are *first* familiar with syntax and semantics through their experiences with quality literature, phonics instruction takes place in a "whole-to-part" environment, allowing children to move

from what they know to what they don't know. Moustafa and Maldonado-Colon (1999) agree. The past debate of "phonics vs. whole word" (Hall, 1961; Wardhaugh, 1968) has been left for the more current conflict between phonics advocates and whole language proponents. The controversy is no longer *whether* to teach phonics but *how* to teach phonics. (However, Glazer (1997) *does* describe members of the very small population that probably don't learn best with a phonics approach.) In 1961, Hall stated that speech sounds do not normally occur in isolation and so it is unnatural to ask children to produce them out of the context of the normal flow or stream of speech. Moustafa and Maldonado-Colon assert that children learn phonics more easily with a "whole to part" approach supported by whole language theory. Using shared reading and partner reading to familiarize new readers with the text of a story, poem, or song, a teacher sets the stage for whole-to-part phonics instruction. Comparisons among words and manipulation of word parts in a variety of activities takes the students logically to an understanding of grapho-phonemic correspondences.

Phonics continues to be a "hot topic" in the world of reading instruction. One aspect of phonics, or phonological recoding (pronouncing the sounds represented by the written word), is the use of *onset* (Hockett, 1958; Householder, 1971) and *rime* (Goswami, 1986,1991,1995), previously referred to as rhyme (Hockett, 1958; Householder, 1971). These are the naturally occurring parts of speech that are larger than phonemes (individual speech sounds usually represented by individual letters or letter pairs) but smaller than syllables (Treiman, 1987). Up until 1985, most evidence for the existence of onset and rime units of speech came from research on adults (Fromkin, 1971). Treiman (1985) cites McKay (1970, 1972) as well as Fromkin. Evidence that children make use of onsets and rimes was uncovered by Calfee (1977), cited in Moustafa (1997). He asked children, by example, to delete onsets, leaving just the rimes. In over 90% of the practice tries, five and six year old children had no problem with the task. In short, they demonstrated their ability to manipulate onsets and rimes without being taught to do so. Research by Goswami and Bryant (1990) cited in Moustafa(1997), corroborated Calfee's findings. Treiman's study (1985) involving children from four to

eight years old in four experiments, resulted in further support for the subsyllablic speech units.

Decoding by analogy (Moustafa, 1997; Wagstaff, 1994) is a word attack technique that may be taught to beginning readers. Cunningham (1975) investigated a "theory of mediated word identification" (p. 127), using a compare/contrast approach. Later, in 1991, she recommends teaching new readers to the use decoding by analogy strategy, even though she does not call it by that name. Goswami (1986) found that even very young children can make use of the analogy strategy. Further research by Goswami (1993) indicates that, as readers become more proficient, they may use the analogy strategy with parts of rimes, such as vowel pairs or onset plus vowel units. In 1992, Gaskins, Gaskins, and Gaskins reported on the development and implementation of this approach to decoding that makes the most of what students *do* know to figure out what they *don't* know. When beginning readers understand that words they don't know may contain rimes of words they do know, decoding becomes natural and easy.

Greaney and Tunmer (1996) investigated readers' sensitivity to onset/rime units. Their results indicate that normal readers are

more likely than very poor readers to spontaneously use orthographic analogies to decode unknown words. The good news is when these poor readers were given direct instruction in the use of analogies, their reading accuracy scores were higher than those poor readers who received standard remedial instruction. Treiman and Zukowski's (1996) research on sensitivity to speech units was extended to include syllables as well as onset/rime units. They found that children more easily identified common units when they were whole speech units, that is, syllables, onsets, or rimes. Parts of these units were more difficult to identify, thus proving to be less useful in decoding. This research attempts to separate the variables of linguistic unit and the size of the unit. The results indicate that effects of linguistic units on phonological sensitivity cannot always be credited to the size of the unit. In fact, a strong familiarity with rhyme can even counteract the expected syllable advantage.

Peterson and Haines (1992) investigated the effects of analogy training with kindergarten children on three aspects of beginning reading: analogy use, phonemic segmentation and letter-sound knowledge. Children were divided into low-, middle-, or

high-segmenters, according to pretesting. Each group showed significant gains over the control group but the low group gained most in segmentation ability with small but significant gains in letter-sound knowledge. Middle- and high-segmenters showed the greatest gains in the analogy task and letter-sound knowledge. These results provide further support for the role of onset/rime units in beginning reading and also may demonstrate how rhymes contribute to phonemic awareness.

In light of all this research on decoding by analogy and the usefulness of onset and rime, one would think that the scale is clearly tipped in favor of this strategy. However, Bruck and Treiman (1992) report that beginning readers using the analogy strategy learned new words most quickly but yielded the poorest long term results. Similar results were found by Wise, Olson, and Treiman (1990). Moats (1998) clearly recommends a "bottom up" approach to teaching beginning reading, introducing analogies only *after* children have had extensive blending practice with several consonant phonemes and a couple of vowel phonemes.

Some researchers may question the validity of orthographic analogies, claiming that the phonology of the word may be the real

reason for decoding by analogy. Goswami (1990) addressed these concerns by investigating the usefulness of phonological analogies that are separate from the orthographic analogies. In other words, when words rhyme but are spelled differently, can the sound aid the reader in decoding the new word? This effect has been called phonological priming but Goswami's results indicate that it has no significance on decoding in context and a minute role in decoding individual words in lists.

In regards to spelling, Goswami (1991) reported that when consonant blends were part of the rime of the words studied, the spelling sequences were easier to learn than blends that broke the rime into parts. Additionally, she found that sequences that shared a vowel as well as the consonant blend were more easily learned when the sequence was at the end of a word, reflecting the rime, than at the beginning of a word, extending the onset. Furthermore, Englert, Hiebert, and Stewart (1985) found that direct instruction in onset and rime patterns and use of analogies could assist mildly handicapped students in spelling new words.

There is further evidence that children *naturally* divide syllables into onsets and rimes. Kirtley, Bryant, MacLean and

Bradley (1989) administered a series of word manipulation tasks to children, some of whom were not yet able to read. They concluded that onsets/rimes were easier to manipulate than individual phonemes. In a related study, Bowey and Francis (1991) used "oddity tasks" to measure the difficulty of phoneme recognition as opposed to onset/rime recognition. Oddity tasks require the subject to choose the item that doesn't belong with the others (odd one out). In all three groups of children (some non-decoders, some early decoders), onset/rime tasks were equally difficult but the phoneme tasks were more difficult than the rime tasks. Some of the youngest children could perform the onset/rime tasks but none could perform above chance on the phoneme tasks. Clearly, onset/rime is easier to understand. Further evidence is provided by Ehri and Robbins (1992), Goswami and Mead (1992), McClure, Ferreira, and Bisanz (1996), and Moustafa, (1995). Each of these studies suggests that manipulation of onsets and rimes, especially in the decoding by analogy strategy, is easier than using individual phonemes. Goswami and Mead also concluded that end analogies (rimes) occur earlier developmentally.

Finally, Levy and Lysynchuk (1997) studied four different methods of acquiring initial reading vocabulary. The results of this study are of particular interest since they correlate with comments by Beck and Juel (1995):

> There has been much legitimate criticism of the reading materials used in early reading instruction. Although these materials need improvement, it is important to acknowledge that because children can recognize only a limited number of words, even the most creatively developed materials cannot compete with stories such as *Make way for Ducklings.* Our goal as educators is to *quickly* provide children with the tools they need to read some of the marvelous stories gifted writers have created for them (emphasis added). (p.21)

Of the four methods studied by Levy and Lysynchuk, the two focusing on onset and rime were found to be the quickest. Phoneme segmentation and blending was third and whole word by repetition was the slowest.

In order to draw students into the world of literacy, educators have the responsibility of facilitating the rapid creation of a substantial sight vocabulary. Evidence seems to indicate that those who make use of onset/rime/analogy strategies have a better chance of doing just that.

CHAPTER III

The Research Design

Statement of Purpose

The purpose for the study was to determine the effects of two different formats of a classroom word wall (Alphabetical Format, AF, and Rime Format, RF) on one aspect of phonic decoding, namely, decoding by analogy.

Research Question

When considering the decoding-by-analogy strategy of second grade students, does the Rime Format word wall have a more positive effect than the Alphabetical Format word wall?

Null Hypothesis

There will be no statistically significant difference between the mean scores of the treatments (AF and RF) on an informal test of basic decoding using onsets and rimes.

Definitions

AF – Alphabetical Format

RF – Rime Format (graphemic bases, rhyming patterns)

Decoding by analogy-the tendency of readers to attend to *patterns* in unknown words, rather than individual graphemes. Recognized patterns of letters are accessed from memory and recalled as whole chunks or rimes.

Targeted words-Those words placed on the word wall that share rimes with transfer words.

Transfer words-Words presented to the subjects in posttests.

Subjects

The subjects were 41 second-grade students from a suburban school district in upstate New York.

Materials/Instruments

An outline of the study was provided to each participating teacher. (See appendix A). Word walls were created using standard classroom materials. Transfer words were chosen that share rimes with target words from the curriculum.

Individual word cards created by the researcher were used to present the transfer words to the students.

Procedures

Classrooms were chosen by the decision of the classroom teacher to participate in the study. The targeted words used were part of the regular curricular materials used by the district and/or teacher. Where word lists lacked significant numbers of regular words, lists were augmented by the researcher with words from a rhyming dictionary. Word cards, prepared by the researcher using a personal computer and ink jet printer, were used to test the students individually. The font used was "Librarian," 48 pt. Students were given ten seconds per word to decode.

Words pronounced correctly within that time were counted as accurate. Words incorrectly pronounced, pronounced after that interval, or not pronounced were counted as inaccurate. Classroom scores were calculated by averaging all the subjects' scores (mean score) in each classroom. Eighteen students from classroom "A" participated in the study. Four special education students were excluded. Two students had moved from the district. Twenty-three students in classroom B participated in the

study. Two absent students were posttested (AF) on a subsequent visit, three days later.

Class scores were recorded after three weeks (posttest AF) and again after twelve weeks (posttest RF). Posttest RF was delayed by three factors: the school district schedule included a week-long spring break; the number of words per week that fit into rhyming patterns was small thus requiring more time to accrue a significant number of words; the researcher took time off for personal reasons. Each week, the new vocabulary words were presented as they normally would have been. Then these words were placed on the word wall (AF) as part of the lesson. After three weeks, the word wall was changed to a rime format (graphemic bases). For example, *ab, ack, ad, ag, all, am,* and *an* might be headings on the word wall instead of *a, b, c, d, e, f, and g.* The exact headings were determined by the words used in the particular classroom. The subsequent lessons and vocabulary words were again presented as they would have been. The word cards were placed on the word wall as before using the rime in each word to determine the placement. When multisyllablic words were used, the syllable that was common to all the words in the group was used to determine

the placement, usually the first syllable. Posttest RF was conducted in the same manner as posttest AF, with word cards prepared by the researcher presented to each student individually.

Limitations

Since each classroom served as its own control, the difference of words on each word wall, AF and RF, may have limited the effectiveness of the word wall in the classroom. Words presented later in the year are likely to be more difficult to decode than those introduced earlier. Two similar classrooms using the same words may provide more reliable results.

Where numbers of regular words lacked significant numbers, the researcher augmented the word lists, using Scholastic Rhyming Dictionary. The words chosen may have affected the scores, since they may have been already familiar to some of the children. Also, the transfer words chosen may have been familiar to some subjects. This familiarity may have boosted the scores of the RF posttest.

CHAPTER IV

Analysis of Data

Statement of Purpose

The purpose for the study was to determine the effects of two different formats of a classroom word wall (Alphabetical Format, AF, and Rime Format, RF) on one aspect of phonic decoding, namely, decoding by analogy.

Null Hypothesis

There will be no statistically significant difference between the mean scores of the treatments (AF and RF) on an informal test of basic decoding using onsets and rimes.

Findings and Interpretations

In analyzing the data, the two classes were treated as separate groups, since each class had its own set of words. The classes were arbitrarily designated class A and class B. The raw scores for each class were converted to percentage scores, which

were then used to calculate the t scores. A t test of Differences between Two Mean Scores was used to analyze the data.

Table 1 Decoding Test Results of the Two Treatments, Class A

student number	raw A.F. score	percentage A.F. score	raw R. F. score	percentage R.F. score
3.*	11	.50	10	.56
4.*	21	.95	17	.94
6.*	17	.77	17	.94
7.*	3	.14	8	.44
9.	13	.59	13	.72
10.	7	.32	13	.72
11.	8	.36	7	.39
12.	19	.86	18	1.00
13.	2	.09	4	.22
14.	14	.64	11	.61
15.	5	.23	8	.44
16.	10	.45	14	.78
17.	20	.91	16	.89
19.*	15	.68	13	.72
20.	11	.50	13	.72
21.	18	.82	17	.94
22.	22	1.00	18	1.00
24.*	20	.91	17	.94

*Missing numbers represent special education students, excluded from the study.

Table 2 t-Test Results of the Two Treatments, Class A

Treatment	df	$\bar{x}$	s.d.	t
Alphabetical Format	17	59.56	28.8	
Time Format	17	72.06	23.5	4.17

crit $t=\pm 3.965$; $p<.001$

Table 3 Decoding Test Results of the Two Treatments, Class B

student number	raw A.F. score	percentage A.F. score	raw R.F. score	percentage R.F. score
1.	19	.79	19	.95
2.	10	.42	10	.50
3.	12	.5	15	.75
4.	14	.58	12	.60
6.*	5	.21	13	.65
7.	22	.92	19	.95
8.	7	.29	13	.65
9.	19	.79	17	.85
10.	13	.54	14	.70
11.	17	.71	17	.85
12.	1	.04	4	.20
13.	17	.71	16	.80
14.	16	.67	14	.70
15.	7	.29	13	.65
16.	21	.88	20	1.00
17.	8	.33	4	.20
18.	17	.71	17	.85
19.	6	.25	12	.60
20.	20	.83	20	1.00
21.	13	.54	12	.60
22.	5	.21	9	.45
23.	3	.13	3	.15
24.	12	.50	14	.70

Student #5 was absent.

Table 4 t-Test Results of the Two Treatments, Class B

Treatment	df	$\bar{x}$	s.d.	t
Alphabetical Format	22	51.5	25.82	
Time Format	22	66.74	24.34	5.42

crit $t=\pm 3.792; p<.001$

The Mean AF Score (59.56) and RF Score (72.06) for Class A resulted in a t score of 4.17 (See Table 2). Since the critical t at 17 degrees of freedom is 3.965 at the .001 level of confidence, the null hypothesis is rejected; the mean scores of the two treatments were different at a statistically significant level.

For Class B, the mean AF score (51.50) and RF score (66.74) resulted in a t score of 5.42 (See Table 4). Since the critical t at 22 degrees of freedom is 3.792 at the .001 level of confidence, the null hypothesis is again rejected; the mean scores of the two treatments were different at a statistically significant level.

Summary

For each class, the informal test of decoding scores, or raw scores, were converted to percentage scores. The differences between the two mean scores were compared using a t-test. The t-scores were calculated using the percentage scores. The resultant t-scores were found to exceed critical t for the appropriate degrees of freedom even at a .001 confidence level, thus rejecting the null hypothesis and concluding that the difference between the mean

scores for the two treatments was statistically significant for both classes.

CHAPTER V

Conclusions and Implications

Statement of Purpose

The purpose for the study was to determine the effects of two different formats of a classroom word wall (Alphabetical Format, AF, and Rime Format, RF) on one aspect of phonic decoding, namely, decoding by analogy.

Conclusions

The results of the t test indicated that, in both of the second grade classes, there was definitely a statistically significant difference between the Alphabetical Format word wall and the Rime Format word wall on decoding by analogy skills after three weeks and twelve weeks, respectively.

The t test results demonstrated that when students were exposed to a Rime Format classroom word wall, their ability to decode words that share rimes with words from the word wall improved greatly over the same decoding ability when the classroom word wall was an Alphabetical Format. When the mean

AF scores (treatment 1) were compared to the mean RF scores (treatment 2), the resultant difference was statistically significant.

Discussion

In an effort to minimize the effects of an external influence on the students in these two classrooms: (1) the word walls were created with materials from the classrooms and from standard materials provided by the researcher and (2) the words were presented by the classroom teachers in the same manner that previous words had been presented.

Informal comments made by classroom teachers indicated that the two groups of students had differing levels of interest in the word walls during "free time." The teacher from classroom A indicated that those students in her class showed little or no interest in the word wall. She also indicated that she was more likely to stress using the dictionary or "Quick Word" (personal dictionaries that the students keep in their desks) over the word wall for spelling, fearing an over dependence on a classroom word wall.

The teacher from classroom B observed a number of students who regularly showed interest in the word wall during free time, especially in the context of "playing school." She also indicated that she had used a word wall in the past and had considered using one again when the researcher distributed the survey (Appendix A).

Without any specific instructions on how to use the word walls, the teachers involved in this study effected a positive change in the decoding by analogy skills of their students. This suggests that, with specific word wall activities, teachers may be able to help students acquire decoding skills at a much faster rate than they do now.

Implications for Further Research

This comparison between two formats of classroom word walls makes the assumption that a word wall is better than no word wall. Further research may prove this assumption to be mistaken. Comparing decoding skills of a classroom with and without a word wall may have interesting results.

This particular study involved only two classes of second grade students. Subsequent studies may find different results

with older or younger populations. An extended study that goes beyond the time frame of this study should be done to determine if the same results would hold true. Where class lists lacked adequate numbers of regular words, the researcher supplemented the lists with words from a rhyming dictionary. An extended study, using only words from the curriculum may result in different results, since many words that young children learn do not have rhymes. The numbers of these "sight words" may affect the resultant data. Finally, further study into the effects of a word wall format with specific related activities would be of great interest to educators, for example, the comparison of a rime format word wall with and without directed activities.

Implications for the Classroom

This study compared two different formats of a classroom word wall. Educators can be assured that making rimes more evident to beginning readers does indeed help them improve decoding by analogy skills. This study does not, however, demonstrate that using a word wall is better than not using one. If teachers make use of a word wall already, they may want to

consider changing the format, to make more obvious the rimes that words share. If a word wall is not part of the classroom atmosphere, adding one is something that each individual must decide after careful consideration.

Summary

This study demonstrated that the decoding ability of second grade students improved after changing the classroom word wall from an alphabetical format to a rime format.

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Appendix A

Word Wall Study Outline

Thank you for volunteering your class to participate in this study! This outline will provide an overview of the study design. Depending on the number of words that are taught each week, the data collection portion could last 6 weeks or more. This outline is based on an estimate of 10 words per week. The first half of this period will give the students the opportunity to use an alphabetically formatted word wall to display the words that are included with each story. e.g. ⟹

a	b	c	d	f
an	bat	cone	doll	fish
	boy			
g	h	I	j	k
got	hat	ice	jump	kite
	hoe			
l	m	n	p	s
leg	man	nap	pot	sap
	Meg	nice		
t				
tone				

At the end of this first half, each student will be asked to read a list of targeted words that have the same graphemic bases (rimes) as many of the words from their stories. For example, using this ⇧ word wall, the list might look something like this: toy, wish, hot, toe, mice, pump, peg, pan, and cap.

The second half of the study will give the students the opportunity to place their words on a rime-based word wall that may look something like this: ⟹

-an	*-ap*	*-at*	*-eg*	*-ice*	*-ish*
an	nap	bat	leg	ice	fish
man	sap	hat	Meg	nice	
-ite	*-oe*	*-oll*	*-one*	*-ot*	*-oy*
kite	hoe	doll	cone	got	boy
	foe		tone	pot	
-ump					
jump					

After three weeks of using this rime format, The children will again be asked to read,

individually, from a list of words much like the first one. It will be derived from the list of words that the children have had in their stories but, again, will be words that share graphemic bases with those words in their stories.

We can choose a start date that is agreeable to everyone involved. To plan the word walls, I will need a list of words that you will expect to be teaching from Jan._____ to March _____, 1999. Can you give me an estimate of the number of words that you teach each week? I would be willing to start on 1/11, 1/19, or 1/25. You can call me (xxx-xxxx) or send a note home with (daughter) or (son). Thank you in advance for your help.

Appendix B

Posttest AF Classroom A

AF Words	Transfer Words
Annoy	enjoy, coy
Angry	
Awful	
Boring	snoring, coring
Change	range, strange
Chatter	shatter, platter
Direction	
Demanded	expanded, commanded
Dinosaur	
Excited	invited, recited,
Henhouse	
Larger	
Member	
Protect	collect, reflect
Plains	
Reaching	bleaching, preaching
Sense	dense, tense
Snore	
Suppose	dispose, impose
Stretching	fetching, etching
Throwing	
Tractor	

Appendix C

Posttest RF Classroom A

Target Words			Transfer Words	
chance	dance		prance	glance
reach	beach	peach	teach	each
lift	gift		drift	rift sift
change arrange	range strange		exchange	
thumb	crumb		numb	dumb
flake rake	brake		quake	cake
thought	bought		fought	sought
blues	dues clues		glues	ruse
fiction	diction		friction	prediction

Appendix D

Posttest AF Classroom B

AF Words		Transfer Words
Angry		
Awful	Stretching	fetching, etching
Annoy	Quarter-past/after	enjoy, coy
Balloon	Quarter	baboon, cocoon
Brought	President	fought, sought
Burrow	Protect	below, aglow
Balance	Round	
Bristled	Ruler	
Birthday	Scale	
Celebrate	Quarter-to	
Centimeter	Silver	clever, beaver
Chatter	Second	shatter, platter
Clock	Treasures	crock, shock
Cent	Taught	
Decorate	Tried	
Dollar	Time	
Demand	Width	expand, command
Dime	Weaver	
Even		
Festival		
Favorite		
Hurry		curry, scurry
Hibernate		
Height		
Half		
Hour		flour, scour
half-dollar		
Important		
Inch		
Length		
Measure		pleasure, treasure
Money		
Minute		
Nickel		
Perimeter		
Penny		

Appendix E

Posttest RF Classroom B

RF Words		Transfer
Words		
keen	screen	sheen
cozy		
follow	hollow	swallow
tougher		
lively		
milk		
burrow		
amble		
globe	robe	probe
lobe		
atlas		
boring	coring	snoring
sense	dense	tense
excited		
throwing	growing	flowing
suppose	dispose	expose
tractor		
henhouse		
plains	chains	stains
member	remember	December
larger		
reach	teach	bleach
change	range	strange
bony		
scientific		
geography	biography	demography

Appendix F

							Posttest AF Classroom A																18 Students			
	Students	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Words		sp.	ed.			sp.ed.			sp.ed.										moved					moved	
1				1	1		1	O		1	1	1	1	1	1	1	#	1		1	1	1	1		1
2				O	1		1	1		1	#	1	1	#	1	O	#	1		1	1	1	1		1
3				1	1		1	O		1	O	#	1	#	1	O	1	1		#	1	1	1		1
4				#	1		1	#		1	#	1	1	#	1	1	1	1		1	#	1	1		1
5				#	1		#	O		O	O	O	#	#	1	O	O	#		1	#	#	1		#
6				1	1		#	O		#	#	#	1	#	#	O	1	1		1	1	1	1		1
7				1	1		1	#		1	1	#	1	#	#	O	#	1		1	1	1	1		1
8				1	1		1	1		O	1	#	1	#	1	1	1	1		1	O	1	1		1
9				#	1		1	#		#	O	#	1	#	#	#	O	1		#	#	1	1		1
10				1	1		#	O		1	#	#	1	#	1	O	#	1		1	1	1	1		1
11				#	1		#	#		1	O	#	1	#	#	1	#	1		1	O	#	1		1
12				1	1		1	#		1	#	1	1	#	#	#	1	1		O	1	1	1		1
13				#	1		1	1		1	1	1	1	#	1	#	1	1		1	1	1	1		1
14				#	1		1	#		1	O	#	1	#	1	#	1	1		1	1	1	1		1
15				#	1		1	#		O	1	1	1	#	1	1	1	1		1	#	1	1		1
16				#	1		1	O		1	O	#	1	1	1	O	1	1		1	O	#	1		1
17				#	1		#	#		O	#	#	#	#	#	O	#	#		O	#	1	1		#
18				#	1		1	#		1	#	#	1	#	1	O	1	1		#	1	1	1		1
19				1	#		1	#		#	O	#	1	#	1	#	O	1		O	#	1	1		1
20				1	1		1	#		#	1	1	#	#	#	#	#	1		1	#	1	1		1
21				1	1		1	#		1	1	1	1	#	1	#	#	1		1	1	1	1		1
22				1	1		1	#		#	O	#	1	#	#	#	#	1		#	O	#	1		1
23	Totals			11	21		17	3		13	7	8	19	2	14	5	10	20		15	11	18	22		20
24	Scores			50	95		77	14		59	32	36	86	9.09	64	23	45	91		68	50	82	100		91
		Class Mean=				59.56																			
			S.D. =			28.80																			

1 - accurate # - miscue 0 - no attempt (pass)

							Posttest RF Classroom A															18 Students				
	Students	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Words		sp.	ed.			sp.ed.			sp.ed.										moved					moved		
1				1	1		1	1		1	1	0	1	0	#	1	1	1	#	1	0	1	1	1	1	0
2				1	1		1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	#
3				1	1		1	#		1	1	0	1	#	1	#	1	1	1	1	1	1	1	#	1	1
4				#	1		1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	#
5				1	1		1	#		1	1	#	1	0	1	#	1	1	#	#	1	1	1	1	1	0
6				1	1		1	1		0	#	0	1	#	#	#	1	1	1	1	#	1	1	#	1	#
7				1	1		1	#		1	1	#	1	#	1	#	1	1	1	1	#	1	1	1	1	1
8				#	1		#	#		#	0	0	1	#	1	0	#	#	1	1	1	1	1	#	1	0
9				1	1		1	#		1	1	1	1	#	#	0	1	1	1	#	1	1	1	#	1	#
10				1	1		1	1		1	1	1	1	0	#	1	1	1	1	1	1	1	1	1	1	0
11				#	1		1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	#
12				1	1		1	1		#	1	1	1	1	1	1	1	1	1	1	1	1	1	1	#	#
13				#	1		1	1		1	1	#	1	#	1	0	#	1	#	1	1	1	1	#	1	#
14				#	#		1	#		#	1	0	1	#	#	0	1	#	1	#	0	1	1	1	1	0
15				1	1		1	#		0	#	#	1	#	#	#	#	1	#	#	#	#	1	#	1	#
16				#	1		1	#		1	#	#	1	#	1	1	1	1	1	1	1	1	1	1	1	#
17				#	1		1	#		1	1	0	1	#	1	#	#	1	1	0	1	1	1	1	1	0
18				#	1		1	#		1	#	1	1	#	#	1	1	1	1	1	1	1	1	#	1	#
19																										
20																										
21																										
22																										
23	Totals			10	17		17	8		13	13	7	18	4	11	8	14	16		13	13	17	18		17	
24				56	94		94	44		72	72	39	100	22	61	44	78	89		72	72	94	100		94	
	Class Mean =					72.06																				
			S.D.=			23.49																				

1 - accurate # - miscue 0 - no attempt (pass)

							Posttest AF Classroom B																			23 Students
Words	Students	1	2	3	4	5/absent	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1		1	1	1	1		1	1	1	1	1	1	0	1	1	1	1	#	1	1	1	1	0	0	1	
2		1	1	0	#		#	1	#	1	1	#	0	1	0	#	1	1	#	0	1	1	#	0	1	
3		1	0	#	1		#	1	#	1	1	1	1	1	#	#	1	#	1	0	1	1	#	0	1	
4		#	1	1	#		1	1	1	1	1	1	#	1	1	1	1	1	1	1	1	#	1	1	1	
5		1	0	#	1		#	#	#	#	#	#	0	#	1	0	#	0	#	#	#	1	#	#	#	
6		1	0	0	1		#	1	#	1	1	1	#	1	1	#	1	#	1	0	1	1	1	0	1	
7		1	1	1	1		#	1	1	1	1	1	0	1	1	#	1	#	1	0	1	1	#	#	1	
8		1	#	0	1		#	1	0	1	1	1	0	1	1	#	1	1	1	0	1	1	#	#	1	
9		#	1	1	1		#	1	0	1	#	#	#	1	#	#	1	#	1	1	1	1	#	0	#	
10		1	1	1	1		#	1	1	1	1	1	0	1	#	1	1	1	#	1	#	#	#	1	#	
11		1	0	1	0		#	1	0	#	1	1	0	1	1	1	1	#	1	0	#	#	#	0	#	
12		1	0	0	1		#	1	0	1	#	1	0	1	1	1	1	1	#	0	1	#	#	0	#	
13		1	#	#	1		1	1	#	1	1	1	0	0	1	#	1	1	1	0	1	1	1	#	#	
14		1	#	1	#		#	1	0	#	#	0	#	#	#	#	1	#	1	0	1	#	#	0	1	
15		#	0	#	#		#	1	0	1	#	1	#	1	#	#	1	0	1	0	1	0	#	0	#	
16		#	1	0	1		#	1	#	1	#	#	0	#	1	#	#	#	0	0	1	1	1	0	#	
17		1	1	1	0		#	1	1	1	1	1	0	1	1	#	1	#	1	0	1	1	#	1	1	
18		1	#	0	#		#	1	#	1	#	1	0	1	1	#	1	1	1	1	1	#	#	#	1	
19		1	#	1	1		1	1	1	1	#	1	#	1	1	#	1	0	1	1	1	1	#	0	1	
20		1	#	1	#		1	0	0	1	1	1	0	#	1	1	1	#	1	#	1	1	1	#	#	
21		1	1	1	#		#	1	0	1	#	1	0	1	1	#	1	1	1	#	1	0	#	0	#	
22		#	0	#	1		#	1	#	#	#	#	0	#	#	#	#	#	#	#	#	#	#	0	#	
23		1	1	1	1		#	1	1	1	1	1	0	1	1	1	1	0	1	0	1	#	#	0	1	
24		1	0	0	#		#	1	#	#	#	#	#	#	#	#	1	#	#	0	1	#	#	0	#	
	Totals	19	10	12	14		5	22	7	19	13	17	1	17	16	7	21	8	17	6	20	13	5	3	12	
Scores		79	42	50	58		21	92	29	79	54	71	4	71	67	29	88	33	71	25	83	54	21	13	50	
	Class Mean =					51.5																				
			S.D. =			25.8																				

1 - accurate # - miscue 0 - no attempt (pass)

							Posttest RF Classroom B														23 Students					
Words	Students	1	2	3	4	5/Absent	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1		1	#	1	1	1	1	1	#	1	1	#	1	#	1	1	1	0	#	1	1	1	1	#	1	
2		1	#	1	1	#	1	1	1	1	1	1	0	1	#	1	1	0	1	#	1	1	#	0	1	
3		1	1	1	1	#	1	1	1	1	1	1	1	1	1	1	1	#	1	1	1	1	1	0	1	
4		1	1	1	1	#	1	1	1	1	1	1	0	1	1	1	1	#	1	1	1	#	#	0	1	
5		1	#	1	1	1	1	1	1	1	1	1	1	1	1	1	1	#	1	1	1	1	1	1	1	
6		1	1	#	0	#	#	1	1	1	1	1	0	#	1	#	1	1	1	#	1	#	#	#	#	
7		1	1	#	1	#	#	1	#	1	1	#	0	1	#	1	1	#	#	#	1	#	#	#	#	
8		1	#	1	#	0	1	1	#	#	#	1	#	#	#	#	1	1	1	#	1	#	1	#	1	
9		#	#	#	0	#	1	1	1	#	1	1	0	1	1	1	1	0	1	1	1	1	#	0	1	
10		1	#	1	#	#	1	#	#	1	#	1	#	#	#	1	1	1	1	#	1	#	1	#	#	
11		1	1	1	#	1	1	1	1	1	1	1	0	1	1	1	1	#	1	1	1	1	1	1	1	
12		1	0	1	1	1	1	1	1	1	#	1	0	1	1	1	1	#	1	#	1	1	0	#	1	
13		1	1	#	1	0	1	1	1	1	1	1	#	1	1	1	1	#	1	1	1	1	1	1	1	
14		1	1	1	1	1	#	1	#	1	1	#	0	1	1	#	1	#	1	1	1	1	#	#	1	
15		1	1	1	1	#	1	1	1	1	1	1	1	1	1	#	1	#	1	1	1	1	1	#	1	
16		1	1	1	1	1	1	1	1	#	#	1	0	1	#	#	1	#	1	1	1	1	#	#	#	
17		1	0	1	0	0	#	1	0	1	1	1	0	1	1	#	1	#	0	0	1	1	1	0	#	
18		1	1	1	#	#	#	1	1	1	#	1	0	1	1	1	1	1	1	1	1	#	#	0	1	
19		1	#	1	1	0	#	1	1	1	0	1	0	1	1	1	1	#	1	0	1	#	0	0	1	
20		1	0	#	0	1	#	1	#	1	1	1	0	1	#	#	1	0	1	1	1	#	#	#	#	
21																										
	Totals	19	10	15	12		13	19	13	17	14	17	4	16	14	13	20	4	17	12	20	12	9	3	14	
	Scores	95	50	75	60		65	95	65	85	70	85	20	80	70	65	100	20	85	60	100	60	45	15	70	
	Class Average =					66.7																				
				S.D.=		24.3																				

1 - accurate # - miscue 0 - no attempt (pass)